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THE UNIVERSITY OF ALBERTA

Ethnic Identification in a Western Canadian City: An Exploratory Application of Sequential Sampling

by

© Henry Borowski

A THESIS

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ABSTRACT

Eight hypotheses that suggest various influences on ethnic identification are examined. Ethnic identification refers to an individual's preference for describing himself in terms of his nationality or his ethnic background. The variables studied are generation, sex, age, religion, language, education, occupation, and income. The literature on ethnic identification is limited or subsumed in the voluminous literature on assimilation. The hypotheses are those suggested in, or those formed from, the writings of primarily of Francis, Gordon, Johnston, and Mackie.

The hypotheses are tested for two probability samples of the population of Edmonton, Canada and the results compared. The first survey analyzed is the 1978 Edmonton Area Study conducted by the Population Research Laboratory at the University of Alberta. The second survey was especially undertaken for this thesis with the assistance of the Population Research Laboratory. It is called the Self-Identification Study and was administered during November 1980. Interviewers administered the Area Study questionnaire to 452 respondents and the Self-Identification Study questionnaire to 190 respondents at their homes. The surveys differed in one important way. The Edmonton Area Study drew a two stage stratified random sample of fixed size; whereas, the Self-Identification Study used a stratified design to select a sequential sample.

This research has a second purpose; besides, attempting to isolate some factors that influence ethnic identification. It is to apply sequential sampling, which is rarely used, to sociological research and to compare this adaption with the traditional approach.

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I. Introduction

A sociological issue together with a methodological issue is examined in this thesis. While investigating the applicability of sequential sampling to social research, the relationship between ethnic identification and eight social characteristics is studied.

A. Purposes of the Study

There are several reasons why ethnic identification deserves study. First, Canada is a multicultural nation, A consequence of the work of the *Royal Commission on Bilingualism and Biculturalism* is the federal government policy which encourages multiculturalism in a bilingual nation. Whether multiculturalism is a cause or a consequence of what is termed the Canadian ethnic mosaic, ethnicity should play an important role in the lives of Canadians. If the policy of the federal government is effective, then it should foster ethnic identification. Second, scholars generally describe the experience of immigrants to the United States as assimilation into the American melting pot. The Canadian situation is usually described as integration into an ethnic mosaic; consequently, individual identification with ethnic origins should persist. Porter (1979:46) writes that the shibboleth "unity through divesity" aptly describes the Canadian ideology - if, in fact, it exists. Further, this attitude may stem from a fundamental characteristic of Canadian society: "[t]he

ethnic fragmentation of Canada has been one of the outstanding features of its social structure (Porter, 1979:48)." This fact is evident when the ethnic composition of Canada and of the city of Edmonton are examined. The population of Canada[1] is ethnically diverse: roughly, 45 percent is of British origin, 28 percent is French-Canadian, and the remaining 27 percent belongs to *third ethnic* groups.[2] The population of Edmonton exhibits an analogous heterogeneity. Forty eight percent of the residents are *third ethnics*, seven percent are French-Canadian and the remaining 45 percent are of British origin.[3] Richmond and Goldlust (1974:213) stated that

> [i]n a pluralistic society such as Canada, it cannot be expected that everyone will adopt nationality as a primary reference group when asked to define the ethnic group to which they belong.

Canada's ethnic diversity should encourage ethnic identification. In addition, the Canadian federal census forces residents to place themselves within an ethnic origin group, because it does not allow respondents to answer Canadian to the ethnicity question.[4] Yet, in surveys like

---

[1]The percentages were calculated from Table 1: Population by Ethnic Group, for Canada, 1921-71 (Statistics Canada, 1973:1-1).

[2]Third ethnics are persons of neither British nor French origin.

[3]These percentages for Edmonton were calculated from Table 1: Population Characteristics by Census Tracts, 1971 (Statistics Canada, 1974:2).

[4]The question asks: "To what ethnic or cultural group did you or your ancestor (on the male side) belong on coming to this continent (Statistics Canada, 1976:28)."

the Edmonton Area Study (EAS)[5] high proportions of respondents identify themselves as Canadian. When given a choice not all respondents identify with their ethnic backgrounds. The analysis of *National Opinion Research Center* data led Greeley (1974) to conclude that, despite the melting pot myth, ethnicity is associated with important political, social, and economic differences among Americans. Therefore, in Canada it should exert a similar influence on the social and political environment, because of the ethnic diversity and the emphasis on multiculturalism.

This work focuses primarily on establishing what some of the factors influencing a person's identification with either his nationality of his ethnic origins are. Self-reported ethnic identity (or ethnic identification) is treated as the dependent variable; thus, the present approach is unusual. Breton (1977:194) mentions that it is rarely looked upon as a dependent variable. Most of the research on ethnicity has centered on the experiences of the immigrants and their children and its subject matter is broader. Richmond's (1967), Goldlust and Richmond's (1974,1977) work in Canada, and Johnston's (1965,1969,1972) research in Australia are examples of studies of the assimilation and integration of immigrants. The present research draws on this and other literature to form some

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[5]The Edmonton Area Study, which collects information on various topics, is an annual survey conducted by the *Population Research Laboratory* (PRL) at the University of Alberta.

hypotheses about factors influencing ethnic identification and proceeds to test them. Not only does this paper focus on a narrower issue, ethnic identification, but it also does not study the preferred target popualtion. Price (1969:207) noted that most studies of ethnicity and assimilation have focused on groups or regions easily labelled as ethnic. Here, the self-reported ethnic identity of all residents, both foreign and native born, in a city composed of many ethnic groups is studied, rather than one specific ethnic group. There are few studies of such urban populations, but one exception is Mackie's (1978) research note, which assessed the relative importance of nationality and ethnic origin for a random sample of Canadians living in Calgary. Briefly, the self-reported ethnic identity of respondents who live in Edmonton, Canada is examined for two probability samples of the population. The two surveys analyzed are the 1978 Edmonton Area Study and the Self-Identification Study (SIS).[4] The Area Study drew a fixed size sample, but the latter selected a sequential sample. These surveys are discussed in more detail in Chapter III. Finally, the demographic research of Peel and Skipworth and the public opinion research of Krishnan and Borowski (1979) are possibly the only applications of sequential sampling in sociology or a related discipline. The second objective is to examine the consequences of its use in sociological

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[4]The Self-Identification Study gathered data for this research and was conducted with the help and cooperation of the PRL.

surveys and to compare it with non-sequential sampling.

B. Organization of the Thesis

The relevant literature is reviewed in Chapter II. The two surveys and the methodology employed in this research are presented in Chapter III. Chapters IV and V discuss the findings from the analysis of the two surveys and Chapter VI discusses and compares the sampling strategies in more detail. The conclusions,shortcomings and recommendations of this research are presented in Chapter VII.

II. Ethnic Identification, Origin, and Nationality

Prior to reviewing the relevant literature on ethnicity, a few essential terms are defined. The remainder of the chapter will concentrate on points leading to the formulation of the research hypotheses.

A. Terminology

Ethnicity

Ethnicity, ethnic origin, nationality and ethnic identity frequently serve as synonyms for each other. Obidinski (1978:216) defines ethnicity as

> *...varying degrees of reciprocal, common identification (or "peoplehood") marked by (a) symbols of shared heritage; (b) an awareness of similar historical experience; (c) a sense of in-group loyalty or "we-feeling" associated with shared social position, common ancestry, designation by those outside the group, similar values or interests, and often -but not inevitably- identification with specific national origins.* [Italics in original]

Obidinski's definition, which corresponds to Gordon's (1964:24), emphasizes the *sense of peoplehood*. For Gordon (1964:27) ethnicity encompasses four aspects which contribute to a self's identity: national origin, religion, race and nationality.[7]

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[7]The inclusion of race reflects Gordon's interest in the American situation. Although religious groups and ethnic groups overlap, religion is not always considered an aspect of ethnicity.

Ethnic Origin and Nationality

The country from which one's ancestors came usually determines one's national or ethnic origin;* whereas, nationality refers to an individual's country of citizenship.

Ethnic Identity and Ethnic Identification

Ethnic identity and ethnic identification are not necessarily synonymous. The distinction is that:

> [i]dentity, in short, is a label given by others to a person, while identification is a person's attitude towards a particular identity which may converge with identification or oppose it (Johnson,1969:8).

Therefore, ethnic identification or self-reported ethnic identity shall signify a person's perception of his ethnic origin or nationality or some conjunction of the two. Does he feel that he is a Canadian, Greek, or Greek-Canadian? The former aspect, ethnic identity, is not germane to this discussion. Ethnic identification is a complex phenomenon; it sometimes changes during a person's life, is determined by convenience, or is dictated by circumstances (Nagata,1975:175). Francis (1976:258) states that

> *... any kind of social identification should not be assumed to be a constant frame of mind: it becomes intermittenly salient whenever a person is called to make a realistic choice between different reference groups.* [Italics in original]

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*There are numerous exceptions to this rule: Orthodox Jews from Russia, Volga Germans, Poles and Ukrainians born in the Austro-Hungarian Empire.

Ethnic Groups and Categories

Many definitions of ethnic group include the phrase *common descent* or *presumed common origin* (Gordon,1964:24;Greeley,1974:35;Francis,1976:118); thus, they are almost indistinguishable from definitions of ethnicity. Francis (1976:208-209) has divided ethnic groups into two kinds:

1. *primary ethnic groups* who are predominant within a region of multicultural nation, because of their mass migration into an unsettled area or because their annexation through war.'
2. *secondary ethnic groups* are created within a nation by the migration of individuals across international boundaries usually for economic reasons.

Group is used in the sociological sense: a set of individuals who interact with one another in specific ways.'°

Francis (1976:251) used the term ethnic category to describe a collection of individuals who, though not interacting amongst themselves, display certain similarities. Their ethnicity is important to them, but they express it passively, ie., it is not a basis for action. The population of Edmonton is best described by the latter two terms. Participants in ethnic organizations and activities are members of secondary ethnic groups, while most individuals belong to various ethnic categories and identifying with their ethnic origin groups is possibly

---

'The Mennonites of Manitoba and the Tyrolese of Italy are two examples (Francis,1976:208).

'°Gordon (1964:30) defined group as "a set of individuals among whom a set of crystallized relationships exist."

their strongest expression of ethnicity.

B. Ethnic Identification

A discussion of ethnic identification is a collorary of any study of assimilation, because the concepts are theoretically linked.

Assimilation

Identifying with the host society is one indicator of the assimilation of immigrants and their descendents (Francis,1976:254). The identificational assimilation as measured by responses to ethnic identity questions is examined in this research.

Assimilation is the process through which ethnics are absorbed into the host society.'' It involves participation in, identification with, and adoption of the cultural and behavioral patterns of the host society. For Gordon (1964:61) and Newman (1978:42) assimilation refers mainly to the experiences of the ethnic group; whereas, for Francis (1976) and Johnston (1972) it refers primarily to the experiences of the individual. This distinction is more one of preference in the unit of analysis, than one of

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''Integration, accommodation, absorption, and assimilation are dissimilar. Francis (1976:250-253) defined these concepts as follows: (i) integration - "the process by which any new addition to a society becomes part of it," (ii) accommodation - adjustment to the host society, but without acceptance of it or by it, (iii) absorption - the gradual assimilation of the ethnic group into the society, (iv) assimilation - the sociopsychological process absorbing individual ethnics into the society. Accommodation and absorption are types of integration.

antithetical ideas. The two approaches are linked. As the individual is subjected to the pressures of assimilation, his gradual absorption occurs, his ethnic group diminshes in size, and it is eventually assimilated.

Ethnic Identification and Assimilation

In Gordon's (1964:81) model,[12] identificational assimilation occurs after acculturation and structural assimilation: "[o]nce structural assimilation has occurred, either simultaneously or subsequent to acculturation, all other types of assimilation will naturally follow." Identificational assimilation is the "development of a sense of peoplehood based exclusively on the host society (Gordon,1964:71)." One sign of its presence is a person's attachment to his nationality instead of his ethnic origins. Religion and language are two variables that indicate the extent of acculturation, while the quality and quantity of primary and secondary relationships that individual ethnics form with members of the dominant group reflect their degree of structural assimilation. Primary relationships are of a personal, informal, and intimate nature; secondary relationships display the contrary features (Gordon,1964:31-32). Family ties and club memberships are illustrations of the first and relationships formed at work or with doctors and lawyers are examples of the latter. The

---

[12]There are seven types of assimilation in this basically unilinear model: (i) cultural, also called acculturation, (ii) structural, (iii) marital, (iv) identificational, (v) attitude receptional, (vi) behavioral receptional, and (vii) civic (Gordon,1964:71).

present research examines whether certain demographic, cultural, and structural variables are associated with differences in self-reported ethnic identity.

C. Formulation of Research Hypotheses

In this section eight potential relationships between ethnic identification and the independent variables are stated. These hypotheses are exploratory and thus do not test an elaborate model of identification. The discussion focuses on only a few of a potentially large number of influences on the dependent variable.

Ethnic identification is an individual's stated nationality or ethnic origin or some combination of both. If Gordon's model is plausible, then variation in ethnic identification should be attributable to the variation in a host of independent factors. In a study of the saliency of nationality and ethnicity for a random sample of married couples, Mackie (1978) attempted to find some of the influences on identification. Some of these and other variables affecting ethnic identification are elaborated below.

Generation

Generation is discussed first, because in a heterogeneous population it is probably strongly related to ethnic identification. Generation is not clearly a demographic, cultural, or socioeconomic variable, though it is related to all three.

Not surprisingly, Mackie (1978:126) found that identification with ethnic origin is more frequent among foreign born respondents, than it was among the native born respondents. Further, the generational status of non-immigrants will affect their ethnic identification. The successful preservation of a foreign culture or language or both could enhance ethnic attachment of an immigrant's children and grandchildren. Johnston (1969:55) suspected that the assimilation of the second generation is neither rapid nor uniform.

If ethnic identification persists until the third or a subsequent generation, then its presence is possibly rooted in sources other than attachment to an ancestral culture within the home and participation in ethnic organizations. Ethnic identification in these groups may even be of a qualitatively different kind. Isajiw (1975:134) has explained the apparent rediscovery of their ethnic identity by the third generation in these terms:

> [t]he only way to attempt to explain this phenomenon is to see the pattern not in any literal sense of the word "returning," that is, picking up where some forgotten grandfather left off, but in the sense of rediscovering one's ancestral past as something with new meaning. The turn to the past is therefore symbolic.

To explain the *ethnic revival* in the United States, especially among third and fourth generation Americans, Gans (1979:9) developed the concept of symbolic ethnicity:

> [symbolic ethnicity] ... is characterized by nostalgic allegiance to the culture of the immigrant generations, or that of the old country; a love for and a pride in everyday tradition that can be felt without having to be incorporated in everyday behavior.

Gans' concept merges with Isajiw's explanation. Symbolic ethnicity may explain why individuals having weak or non-existent ties with ethnic associations and also, having minimal interaction with other ethnics continue to express their ethnic identity.[13] These individuals who choose easy and non-disruptive means for expressing ethnicity are indistinguishable from their peers in other ways.

If identificational assimilation is a gradual process, then each successive generation should display a greater attachment to its nationality. The number of respondents answering Canadian to the ethnicity question should increases with each generation. A substantial degree of allegiance to ethnic origins among third and fourth generation respondents would indicate that the concept of symbolic ethnicity deserves further study. Therefore, the first research hypothesis is stated as follows:

Hypothesis 1: A difference exists among generations in ethnic identification. The first generation will have the lowest degree of identification with nationality, but the degree of Canadian identification will increase with successive generations.

This hypothesis implies the opposite that attachment to ethnic background decrease for successive generations.

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[13]Gans (1979:12) indicated that intermarriage is a major influence on ethnic identification for the third generation.

Demographic Variables

Sex and age might be directly related to ethnic identification, but, more realistically, they probably function as intervening variables.

Male immigrants are thought to assimilate faster than female immigrants (Johnson,1965:30). Is there a corresponding difference between the sexes in the other generations? The rapid assimilation of males is possibly a function of their active participation in the labor market.'[4] In subsequent generations differences associated with sex probably disappear.

Hypothesis 2: Only in the first generation is sex related to ethnic identification: immigrant males are more likely to identify with their nationality.

Age affects ethnic identification in two potential ways. The first is age at immigration; younger immigrants are more likely to be assimilated (Johnston,1965:30). The second is its reflection of the experiences, background and socialization of individuals and consequently, age may influence ethnic identification. A strong attachment to an ethnic background may persist among older Canadian born persons, whose parents migrated to the prairies from eastern and southern Europe and from Asia. A rural, semi-isolated population within ethnically homogeneous areas could more

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'[4]This explanation is possibly inappropriate for post-war immigrants, because many immigrant women work. This difference may have other causes, for example: the type of employment, husbands acting as heads of households, or knowledge of English.

easily preserve its language, culture and identity. Concentrations of persons of similar ethnic origin were common in Alberta:

> [e]thnicity has been an important factor in determining settlement patterns in both rural and urban Alberta. Government homestead policy did not encourage bloc settlements, but through a combination of promotion of group settlement by colonization companies and the C.P.R., and simply because of the desire for immigrants to be with people from their own cultural background, bloc settlements were commonplace among Mormons, Mennonites, Dutch, Japanese, Doukhobours, Hutterites, Ukrainians, Poles, Germans, and to a lesser degree Scandinavians. Initial groupings were often reinforced through chain migration as immigrants sent for their relatives and friends (Palmer,1972:221).

A prejudice towards certain newcomers prevailed during the first decades of this century:

> [t]he settlement of destitute "Galicians" was opposed by all Alberta newspapers, and by various church and citizen groups (Palmer,1972:73).
>
> [g]roups that were most culturally or "racially" distinct were regarded as most undesirable. Between 1880 and 1920, almost all influential opinion leaders in Alberta expressed fears that illiterate peasants from Europe and Asia would undermine "Anglo-Saxon" political institutions ..., that they would destroy the relative social homogeneity of the west, and they would threaten the middle class patterns of life (Palmer,1972:253).

The prejudices of this period may have inadvertently fostered ethnic identification among the children and grandchildren of these immigrants. The third hypothesis is simply stated as

Hypothesis 3: Younger individuals will more frequently identify themselves as

Canadian.

Cultural Variables

Language and religion are the two cultural variables included in this analysis. Goldlust and Richmond (1974:210) in their immigrant adaption study consider the effects of mother tongue. The acquisition of English is an initial step in the acculturation of non-English speaking immigrants. In homes where the parents spoke a foreign language or it was their mother tongue, allegiance to ethnic origins among the children is likely to be enhanced. The language of the father is possibly of special importance; consequently, the next hypothesis deals with its effects.'[15]

Hypothesis 4: The language of the father(primary language or mother tongue) influences an individual's ethnic identification. Respondents with English speaking fathers are more likely to be Canadian identifiers.

In accordance with Price(1969:196) and Gordon(1975:103) religion is treated as a cultural variable, though elsewhere it is occasionally considered a structural variable (Lai,1971:134). Religion and ethnicity are interwoven concepts; some religious or sacred groups resemble ethnic groups, while members of some ethnic groups belong almost entirely to one religious denomination.'[16] Jews illustrate the former type, while Poles fall into the latter category.

'[15]Exogamous marriages where husband and wife speak different languages complicate this relationship.

'[16]Herberg (1960) has proposed a model of how ethnic groups are assimilated into the three major religions of the United States: Protestant, Catholic, and Judaism. This further illustrates the connection between ethnicity and religion.

The beliefs, behavior, values, and customs of the ethnic group are, in part, determined by religion. The sharing of a religious faith with the dominant group facilitates assimilation into, and identification with the society (Johnston,1965:38). In Edmonton Protestants predominate; therefore, they should identify strongly with their nationality.

Hypothesis 5: Protestants identify themselves as Canadian more frequently than do Catholics.

Socioeconomic Variables

The socioeconomic variables education, occupation,[17] and income are the last variables discussed. Structural assimilation is indicated by convergence on the social and economic variables, ie., the ethnic group or individual comes to resemble some societal norm. The indicators used in the two surveys are poor proxies for measures of secondary relationships,[18] nevertheless, they may suggest the extent of the relationship with the dependent variable. Economic motives were crucial in the decision to migrate of individuals who formed the secondary ethnic groups (Francis,1976:209). Do immigrants and their descendents who rank high on the socioeconomic variables identify strongly with the host country? Do individuals with high income,

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[17]Gilles and Whitehead (1971:87) used occupations that had been converted into Pineo-Porter occupational prestige scores as a measure of structural assimilation.

[18]No measures of primary relationships were included in the Edmonton Area Study; therefore, no hypotheses concerned with their relationship to ethnic identification were tested.

education, and occupational status call themselves Canadian more frequently? A tendency for individuals of higher social class to dissociate themselves from a group that is perceived as inferior exists (Rose,1976:31). The next three hypotheses are presented below.

Hypothesis 6: High educational achievements result in a greater likelihood of expressing Canadian identity.

Hypothesis 7: The frequency of identification with nationality will be lowest for blue collar workers and highest for professionals.

Hypothesis 8: High income is associated with expressions of Canadian identity.

An intervening variable could affect a hypothesized relationship; therefore, when appropriate some of them will be held constant. For example, a disproportionate number of first generation respondents in a sample could influence all the relationships.

Also, results of the analysis should give some indication of the differences between those persons who identify themselves as Canadian and those who do not.

III. Methodology

In this chapter five issues related to the methodologies of the two surveys are discussed. The first section is a brief description of sequential sampling and analysis. The designs of the two surveys, the Edmonton Area Study (EAS) and the Self-Identification Study (SIS), are described in the next two sections. The operationalization of the variables is discussed in the fourth part. The last section recalls a few important points about the analysis of contingency tables and the chi-square statistic. This method was employed in the analysis of the data.

A. Sequential Sampling

In the introduction two objectives were stated: the first was to study ethnic identification and the second was to examine the utility of sequential sampling in sociological research. A brief introduction to sequential sampling is warranted because of its importance to the present research and because of its possible unfamiliarity to social scientists; this section's purpose is to provide an indication of the contrasts between sequential and fixed size sampling. In Wald (1973) sequential sampling and its mathematical foundations are outlined and in Wetherill (1975) a range of sequential techniques and their applications are described.

This description focuses on sequential tests of

hypotheses.'' Usually, a null hypothesis H_0, which states the value of some parameter θ, is tested against an alternative hypothesis H_1, which gives a different value for θ. The set of all possible samples can be divided into two subsets: those for which H_0 is untenable, the critical region of the test, and the remaining samples for which H_0 cannot be rejected. The critical value is either a test statistic or the number of occurrences of a random variable. The conventional procedure is: to establish the size of the critical region (α, probability of making a Type I error), to determine the sample size, to collect the data, and finally to test the hypotheses.

The basic assumption of sequential sampling is that a varying degree of preference exists for accepting the null hypothesis (Wald,1973:27). When a sample yields a value of the test statistic near the critical value, making the wrong decision concerning H_0 is not a serious error. At the boundary no strong preference for accepting or rejecting H_0 exists; therefore, there is a set $\theta \leq \theta_0$ for which failure to accept H_0 becomes a serious error and another set $\theta \geq \theta_1$ exists for which failure to reject H_0 becomes a serious error (Wald,1973:28). Consequently, the value of the test statistic falls in one of three zones:

1. a zone of strong preference for the acceptance of H_0,
2. a zone of strong preference for the rejection of H_0,

''Estimation is less reliable, because sequential samples can be relatively small.

3. or a zone of indifference for either decision.

The acceptance of H_0 implies the rejection of H_1, while rejection of H_0 implies the acceptance of H_1.

Sequential sampling attempts to exploit this set of preferences. The hypothesis is tested after every unit or *m* units are sampled by combining them with all units previously selected. Predetermined boundaries separate the values of the test statistic into the three zones. The test statistic is evaluated and if its value falls into the zone of indifference, then another unit or another *m* units are selected and the test statistic evaluated again. The procedure is repeated until a value of the test statistic occurs that leads either to acceptance or to rejection; sampling terminates at this point.

The size of the sequential sample is a random variable. Wald (1973:157-158) has shown that the probability of a sequential probability ratio test (SPRT) terminating is one.[20] The average sample number function (ASN) provides an estimate of the expected sample size (Wald, 1973:25-27). The binomial SPRT used in the SIS survey is stated in Appendix D.

The advantages of sequential samples over fixed size samples are

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[20]The SPRT is the test of most general interest and resembles non-sequential tests based on the Neyman-Pearson lemma. Wald (1973) described tests for the binomial and normal distributions. Further, practical considerations like finances may require the setting of a maximum sample size at which sampling ceases regardless of the status of the test. Cox and Roseberry (1966) reported that in empirical trials of the SPRT its final sample size varied substantially.

1. that for given probabilities of Type I and Type II errors, fewer observations are required to reach a decision (Wetherill,1975:7;Wald,1973:35),

2. and that the probabilities of both types of errors can be adjusted to any level.

In samples of fixed size the level of the Type I error is specified first; the level of the Type II error is determined by the kind of statistical test employed and by the sample size. Because survey research is expensive, especially when personal interviews are required, reliable procedures employing reduced sample sizes are an asset.

In the survey administered for this thesis the substantive hypotheses of Chapter II are not subjected to sequential tests. Testing eight different hypotheses would be awkward. Rather, a hypothesis about an ethnicity variable was tested to ensure a reasonably representative sample. After sampling stopped, the research hypotheses were tested in the usual way.

B. Edmonton Area Study

The Edmonton Area Study is series of annual surveys whose overall theme is the measurement of *quality of life* (Kennedy et.al.,1979). Each year's survey is an omnibus of questions selected from those submitted by social researchers at the University of Alberta. The surveys cover a range of issues. The 1978 survey was analyzed because it included questions on ethnicity. The 452 personal interviews conducted with adult Edmonton residents during January and February 1978 represented a response rate of 80 percent. A

two-stage stratified random sample of households was selected from the reverse telephone directory. First, a sample of census enumeration areas, which were stratified by income, was drawn; then respondents were selected from each enumeration area.

C. Self-Identification Study

The data analyzed in Chapter V are from the SIS that employed sequential sampling. The questionnaire was administered through personal interviews to a random sample of 190 respondents during November 1980. The response rate was 77 percent. Because an objective was to compare the two surveys, most of the twenty-five questions in the SIS interview were taken verbatim from the EAS questionnaire. The main differences were the inclusion of four additional questions and its focus on one topic.

The Sampling Strategy

A different stratification procedure was used for the SIS sample. First, the nine census tracts (CT) experiencing rapid population growth between 1971 and 1976 formed a separate stratum.[21] Next, each of the 73 remaining CTs was assigned to a stratum in a 3x2 table. The proportions of foreign born residents and of residents who reported a non-official language, neither French or English, as their

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[21]Rapid growth was interpreted as an increase of over 1500 persons during the five year period. The nine CTs in this stratum are primarily in recently developed residential areas. The remaining CTs displayed little change in population (Statistics Canada, 1976; 1978).

mother tongue were used to apportion CTs to these strata. The proportion of foreign born was divided into three levels: low (less than 15 percent), moderate (15 to 23 percent), and high (more than 23 percent). The mother tongue variable is dichotomous: low (20 percent or less) and high (more than 20 percent). These variables were used to obtain a sample that reflected Edmonton's ethnic diversity. After drawing a census tract from each stratum, an enumeration area was selected from each of the seven CTs. A table of random numbers was used to make both selections. In the last step a random digit generating program drew a sample of households from the city of Edmonton census tapes.[22] A maximum of thirty completed interviews was required from each area. The CTs were stratified instead of enumeration areas, because the city enumeration areas differ from those used in the federal census and because the city census lacks information on the stratification variables.

The Sequential Hypotheses

A binomial SPRT was used to test a hypothesis about the degree of Canadian identification in each stratum. If this proportion was markedly different from the value of 0.562 in the EAS, then sampling should terminate quickly. Two sets of hypotheses were tested:[23]

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[22]These are tapes of the municipal census administered by the city.

[23]The values 0.640 and 0.485 correspond to the 99.9 percent confidence interval of the EAS value 0.562.

Set I	Set II
H_0: $p_0 = 0.562$	H_0: $p_0 = 0.485$
H_1: $P_1 = 0.640$	H_1: $P_1 = 0.562$

Areas with a low proportion of foreign born were expected to have more Canadian identifiers (Set I), but areas with a high proportion of foreign born would have fewer (Set II). In the two strata with a moderate number of foreign born, Canadian identifiers would be more numerous in the area with fewer non-official mother tongue residents (Set I) and they would be less numerous in the area with more residents who know neither English nor French (Set II). Both hypotheses were tested for the stratum containing the areas of rapid population growth, because neither seemed more appropriate. The results of the binomial SPRT are reported in Chapter VI. The EAS proportion for respondents replying Canadian was used in the hypotheses, because the census does not ask people to identify with their ethnic origin.

If the sequential test failed to terminate, then sampling was stopped after thirty interviews were completed in a stratum. The available funds permitted a maximum sample size of 210. The interviews were collected in groups of five and the results were tabulated in the same order as the households were selected.

D. The Main Variables Studied

The discussion shifts from sample selection to the categorization of the variables.

Ethnic Identification: The Dependent Variable

Richmond and Goldlust (1974:213) maintained that there are two methods for examining identification with Canada: first, commitment to Canada as measured on an index and second, personal identity as expressed in ethnic terms. Francis (1976:254) also recommended the degree to which an individual identifies with the host society as a measure of assimilation. Expression of personal identity is the indicator used here. Respondents were shown a card with fifty-two ethnic identities and were asked to select the one that best answered the question: "how would you define your ethnic identity?" The identities are listed in Appendix B. The two reasons for measuring ethnic identification in this way are that:

1. to allow for the comparison of the surveys the question in the SIS survey had to replicate the one in the EAS survey,
2. the Richmond and Goldlust index applies only to immigrants.

With fifty-two categories, not only does the respondent face a formative task, but the researcher will encounter difficulties during data analysis. Therefore, Canadian, English-Canadian, and Canadian-English formed a single category and the remaining groups constituted a second category, which was labelled non-Canadian. The former

classification is reasonable, since the British are the dominant cultural group in Canada (Kalbach,1975:139).[24] Also, many of the categories contain no, or few, cases.

Generation

The birthplaces of the respondent, of his father, and of his paternal grandfather were used to determine his generational status. In the first generation the respondent was born outside Canada; in the second generation only he was born in Canada; in the third generation only he and his father were Canadian born; and in the fourth generation the respondent, his father and grandfather were born in Canada.[25] An SPSS[26] subroutine classified the EAS cases (which were stored on a magnetic disc) into generations. Because information was lacking, five of 452 cases could not be classified. In the SIS survey respondents were assigned to generations as the data were coded. Some fourth generation respondents in both surveys actually belong to older generations, since their ancestry was not traced to the first relative to come to Canada.

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[24]No significant differences appeared between the individuals classified Canadian, English-Canadian, and Canadian-English, when the chi-square statistic was determined for contingency tables of these three ethnic identities by the independent variables in this study. Also, the position on the show card may have effected the frequency with which these three response were selected.

[25]There are exceptions to this classification; immigrants who arrived at a young age are sometimes treated as second generation individuals (Rose,1976:24) and under rabbinnical law a child is considered Jewish, if his mother is Jewish, though he assumes his father's name (Barron,1967:35).

[26]Statistical Package for the Social Sciences

Demographic Variables

The variable sex requires no discussion, but the age categories require a little explanation. Three age groups were created to simplify the analysis. There are two reasons for the use of this division. First, individuals under forty years of age were born during or after the Second World War and individuals over sixty years of age were born before the end of the First World War or shortly after. Although these events are not necessarily linked to ethnic identification, they separate three groups with different experiences. Second, 1921 was a year with a high crude birth rate; whereas, the years 1938 and 1939 were years with a low crude birth rate (Kalbach and McVey,1979:95-96). Because of the population's age struture, the youngest group accounts for over fifty percent of the cases in both surveys, and the eldest group for less than fifteen percent of the cases.

Cultural Variables

On the EAS questionnaire respondents were asked to state their *primary language* and that of their ancestors, but apparently, no definition of primary language was given interviewers.[2'] Consequently, on the SIS questionnaire it was replaced with a mother tongue question. Primary language may either refer to the language most frequently spoken or to the one learned first. The census defines mother tongue as the language first spoken and still understood. A clearer

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[2']This information is from a discussion with Cliff Kinzel of the Population Research Laboratory.

question on the EAS would have been helpful in interpreting the data. English and non-English constitute the categories for the language questions. Most respondents speak English, but their parents and grandparents are less likely to speak or have spoken English.

Subjects were asked their religious preference and their answers placed them in one of three groups: Protestants (all non-Catholic Christians), Catholics (Roman and Ukrainian Catholics and Greek Orthodox), and other (predominantly those who answered no religion).[28] Approximately twenty percent of the respondents in the two samples reported no religious preference.

Socioeconomic Variables

The variable education was divided into three levels: (i) some high school, (ii) high school complete or some college, (iii) post secondary complete. Individuals with similar educational backgrounds are likely to have had similar experiences: the labor market is one area were this might apply.

Professionals, white collar employees (sales, service, and clerical occupations), and the blue collar workers (manual occupations) formed the three occupational classes. This division is preferable to one like Porter's (1967:93), because it distinguishes between professional and white collar jobs. When these categories are combined, they

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[28]In the SIS sample 22 percent of the Protestant respondents replied *Protestant* to the question; the rest specified a denomination.

represent 62 percent of the EAS respondents.

Income was arbitrarily divided into three categoreis: (i) low (less than $12,000), (ii) medium ($12,000 to $24,999), (iii) high (over $24,999). Since the question asked for household income, rather than individual income, the majority of cases are in middle group.

Occupation on the EAS was coded into broad occupational groups; therefore, a composite measure of socioeconomic status like the Pineo-Porter occupational prestige scale or Blishen scores could not be easily assigned to respondents.

E. Data Analysis: Contingency Tables and the Chi-square Statistic

The analysis of contingency tables and nominal data is adequately treated in numerous statistics texts like Yule and Kendall (1950), Blalock (1972), or Hayes (1973), but three common sources of error or misuses of chi-square discussed by Burke and Lewis (1971) merit mention. The categorization of the variables has been discussed at length, because errors in tests of association frequently stem from questionable categorizing. Burke and Lewis (1971:88) recommended that:

> ... whenever possible categories for frequency data should be established on the basis of completely external criteria ...

Further, small theoretical frequencies can cause difficulties. They warned

> [w]henever small theoretical frequencies enter into calculations of [chi-square], the experimenter has no sound basis either for accepting or rejecting a hypothesis except when the value is quite extreme (Burke and Lewis,1971:86).

Large samples usually avoid this difficulty, unless analysis becomes complex, ie., numerous control variables are introduced. The third common error is lack of independence between single events or measures, but this should not be a problem, because the present analysis does not involve before and after treatments of data.

IV. Analysis of Results: The Edmonton Area Study Data

The hypotheses stated in Chapter II were tested using chi-square tests of association. The outcomes of these tests and the examination of the contingency tables for the Edmonton Area Study sample are discussed below, but first, its background characteristics are described.

A. Background Characteristics of the Sample

In Table 4.1 the EAS and census values of a number of variables are compared. The points of divergence between the two merit some elaboration. The larger proportion of males in the sample possibly reflects either the emphasis on obtaining a sufficient number of males during the interviewing or a population shift caused by the attractiveness of Alberta's booming economy to mobile young single males. In the category single the census includes all persons of at least 15 years of age; whereas, the EAS survey includes only one or two teenage respondents. The EAS has proportionately more individuals in the *other* religious category, because it asked for religious preference and accepted the response *no religion*, but the census requests a statement of a "specific denomination, if possible, even if they [the respondents] did not actually attend a place of worship (Statistics Canada, 1976:18)." Table 4.1 also shows that there are roughly five percent more foreign born respondents in the sample. The final comparison is between respondent's primary language and the census figures for

TABLE 4.1: A COMPARISON OF THE EDMONTON AREA STUDY WITH THE CENSUS

VARIABLE	VALUE	EAS[1]	CENSUS
Sex	male	53.8%	49.7%[2]
Age (median)		35.2	37.1[2]
Marital status	single	23.9%	29.3%[2]
	married	63.9%	62.3%
	other	12.2%	7.9%
Religion	Protestant	43.8%	55.1%[3]
	Catholic	28.0%	36.2%
	Other	28.2%	8.7%
Birthplace	Canada	76.1%	80.9%[3]
Language: Primary language	English	86.3%	
Mother tongue	English		76.7%[2]
Language most often spoken at home	English		90.3%[3]

[1]There are 452 respondents in the sample.
[2]1976 Census of Canada (Statistics Canada, 1978)
[3]1971 Census of Canada (Statistics Canada, 1974)

mother tongue and home language. In Chapter III it was noted that no definition of primary language was given; therefore, the comparison suggests that it was interpreted by respondents to mean the language most frequently spoken at home. In the EAS sample 36 percent of the respondents had

not finished high school, while 48 percent had completed it. The remaining 16 percent have a university degree. These precentages were not compared to the census values because of differences in the categorization of the variables.

B. Ethnic Identification in the Edmonton Area Study Sample

The findings and results of each of the tests of association for the hypotheses stated in Chapter II are discussed below.

Generation

Table 4.2 is the crosstabulation of ethnic identification by generation. The column percentages show that each generation accounts for at least a fifth of the respondents in the sample. The chi-square calculated for this table is highly significant ($p \leq 0.001$) leading to the rejection of H_0. Consequently, the first hypothesis stating that a difference exists among generations is tenable. The Pearson contingency coefficient equals 0.399 suggesting a relationship of moderate strength.[2] Knowledge about generational status does reduce errors in predicting self-reported ethnic identity (asymmetric lambda = 0.33).

Though the chi-square statistic is not a directional test, closer examination of the table reveals that the

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[2] "The maximum value of the Pearson contingency coefficient for a $s \times t$ table is approximately:

$$C=[(t-1)/t]^{1/2} \quad \text{when } t \leq s$$

or

$$C=[(s-1)/s]^{1/2} \quad \text{when } s \leq t$$

(Yule and Kendall, 1950:54).

TABLE 4.2: ETHNIC IDENTIFICATION BY GENERATION, EAS 1978

ETHNIC IDENTITY	GENERATION				TOTAL
	First	Second	Third	Fourth	(row)
Canadian	20 (19.2)[1]	72 (58.5)	87 (73.7)	70 (72.9)	249 (56.5)
Non-Canadian	84 (80.8)	51 (41.5)	31 (26.3)	26 (27.1)	192 (43.5)
Total [column]	104 [23.6]	123 [27.9]	118 [26.8]	96 [21.8]	441

x^2=83.70 p=0.0000 C=0.399
[1]The figures in parentheses and brackets are percentages.

degree of Canadian identification increases from the first to the third generation. The similarity of the fourth generation to the third generation might be a consequence of the number of French-Canadians in the former. Because France was one of the founding nations of Canada, French-Canadians have always played an important role in Canada's history and their position as an ethnic group is unique. When the eight French-Canadians are excluded, the proportion of Canadian identifiers in the fourth generation jumps to 79.5 percent. Thus, there appears to be some support for the belief that identification with nationality increases with each successive generation. However, there are qualifications: much of the chi-square (70 percent) is attributable to immigrants who are rarely Canadian identifiers. In the other generations the majority reports Canadian identity and the differences between the generations are small. Though the

strength of this relationship stems from the expressions of ethnicity among newcomers, at least 20 percent of the fourth generation identified with their ethnic origins.

When sex, marital status, education and religion are held constant, the relationship between generation and ethnic identification remains significant ($p \leq 0.01$) for all levels of these intervening variables, but some interesting differences did appear. First, the association is stronger among males ($x^2=74.1$, C=0.487),[30] than it is among females ($x^2=18.8$, C=0.290). Of the 104 immigrants 71 percent are male, but this is not the origin of all the variance between the sexes. Table 4.3 shows that female immigrants are Canadian identifiers twice as frequently as are male immigrants. Age at immigration, length of residence, spouse's birthplace, or his ethnic origin could influence ethnic identification. The mean age on arrival in Canada for the women was 22.5 and for men it was 23.1; this is hardly an important difference. The female immigrants have lived in Canada (30.6 years) significantly longer than the male immigrants have (20.9 years). A spouse's birthplace, especially if it is Canada, and his ethnic origin may influence a respondent's identification, but unfortunately the survey did not request this information. The low level of identification with nationality among male immigrants and its high level among men of other generations produces a

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[30]The symbol x^2 will refer to the chi-square statistic and C will refer to the Pearson contingency coefficient.

TABLE 4.3: IDENTIFICATION AS CANADIAN BY GENERATION AND SEX EAS 1978

GENERATION	SEX	
	Males	Females
First	14.9% (74)'	30.0% (30)
Second	70.0% (60)	47.6% (63)
Third	78.3% (60)	69.0% (58)
Fourth	75.0% (44)	71.2% (52)
All Respondents	55.9% (238)	57.1% (203)

'the number of respondents of each sex in that generation

strong relationship. Second, among females Canadian identification rises with each successive generation, but among males it is low in the first generation and dramatically increases in the second generation to remain fairly constant afterwards. Second generation females are weaker Canadian identifiers then are their male counterparts. The elimination of French-Canadians from the fourth generation alters identification little; it raises the percentage for males to 80.5 and that for females to 78.7. Third, the relationship is significant for all three levels of education with immigrants, only about 18 percent in each case, infrequently describing themselves as

Canadian. In the university educated group Canadian identification is exceedingly high (90 percent) for the non-immigrant generations. In the other two groups expressions of Canadian identity tend to increase with each generation. These are the categories: high school not complete and high school complete. Fourth, identification with nationality displays a tendency to increase within each religious category, but Table 4.4 shows that the increase is not necessarily a smooth progression. For Protestants and those in the *other* group there is a slight drop in the fourth generation. These two groups have matching patterns of identification, with only the immigrants having an affinity for ethnic identities. The Catholics are different: only in the fourth generation does Canadian identification exceed 50 percent.

Demographic Variables

Sex

No statistically significant relationship (p=0.05) exists between the respondent's sex and his self-reported ethnic identity for either the entire sample or the immigrant subsample. Therefore, Hypothesis 2 is untenable. Female immigrants reply Canadian more frequently than males, but this is a very weak relationship and not even in the expected direction. The number of female immigrants is small (n=30) and consequently, this difference may not be of major importance. As suggested, there is no strong association when the entire sample is considered.

TABLE 4.4: CANADIAN IDENTIFICATION IN EACH GENERATION WITH RELIGION HELD CONSTANT

GENERATION	RELIGION		
	Catholic	Protestant	Other
First	8.1% (37)'	24.1% (29)	26.3% (38)
Second	41.2% (34)	68.3% (63)	57.7% (26)
Third	32.0% (25)	85.5% (62)	83.3% (30)
Fourth	62.1% (29)	79.5% (39)	75.0% (28)
All Respondents	34.4% (125)	69.4% (193)	58.2% (122)

'the number of respondents of a religion in a generation

Age

Ethnic identification and age are not statistically related; the largest difference between age groups in the proportion of Canadian identifiers was 0.05 or 5 percent. Two relevant points deserve mention: first, when the age distribution is positively skewed and the sample is small, these age categories will not be ideal for chi-square tests of association; second, because of the relatively recent settlement of Alberta, there is some correspondence between age groups and generations. Table 4.5 shows that many immigrants are over sixty, while more of the under forty year olds are in the third and fourth generations.

TABLE 4.5: DISTRIBUTION OF AGE GROUPS ACROSS GENERATIONS

AGE	GENERATION			
	First	Second	Third	Fourth
< 40 years (N=252)	19.4%	19.4%	34.9%	26.2%
40 to 60 years (N=109)	20.2%	45.0%	18.3%	16.5%
> 60 years (N=72)	44.4%	29.2%	12.5%	13.9%

x^2=53.78 $p \leq 0.001$ C=0.332

Cultural Variables

Language

Table 4.6 presents the crosstabulation of respondent's ethnic identification by father's primary language. Hypothesis 4, which states that respondents with English speaking fathers will be stronger Canadian identifiers than those with non-English speaking fathers, has support. The association is highly significant, but it is of moderate strength. The relationship persists for all levels of the variables sex, education, and religion. It is approximately of the same strength in most instances (C=0.40 to 0.45). Most fathers of third and fourth generation respondents -about 90 percent in each case- speak English, while 25 percent of the immigrants have fathers who speak English. Clearly, generation and primary language are not independent and consequently, generation was not used as a control variable.

Religion

TABLE 4.6: ETHNIC IDENTIFICATION BY FATHER'S PRIMARY LANGUAGE

ETHNIC IDENTITY	LANGUAGE English	Non-English	TOTAL
Canadian	213 (73.4%)	32 (21.8%)	245 (56.1%)
Non-Canadian	77 (26.6%)	115 (78.2%)	192 (43.9%)
Total	290	147	437

x^2=103.7 p=0.0000 C=0.441

As predicted by Hypothesis 5, Protestants identify with their nationality to a greater extent than do Catholics. The chi-square for Table 4.7 is significant at 0.01, but the contingency coefficient of 0.279 indicates a weak relationship. The other category has a pattern of identification resembling the sample as a whole and falls between the patterns for the Protestant and Catholic denominations.

The relationship did not remain significant for all levels of the variables that were controlled. Though the association is significant for both sexes, it is more pronounced for females (C=0.358), than it is for males (C=0.202). The relationship persists among married respondents, but not among unmarried individuals because single Catholics incline towards indentifying with their nationality. Likewise, among university educated persons Catholics resemble their Protestant counterparts. When

TABLE 4.7: ETHNIC IDENTIFICATION BY RELIGION, EAS 1978

ETHNIC IDENTITY	RELIGION			TOTAL
	Protestant	Catholic	Other	
Canadian	134 (69.1%)	43 (34.4%)	71 (57.7%)	248 (56.1%)
Non-Canadian	60 (30.9%)	82 (65.6%)	52 (42.3%)	194 (43.9%)
Total	194	125	123	442

x^2=37.28 p=0.0000 C=0.279

generation is held constant, the relationship remains significant at 0.01 for only the third generation. Immigrants, regardless of their religion, identify with ethnic backgrounds, while the fourth generation respondents regard themselves as Canadian. The second and third generation respondents display a pattern of identification resembling the sample as whole. The tables of association for the third generation and the university educated subsamples involve some small column frequencies; therefore, the results can only be tentative.

Socioeconomic Variables

Education

The relationship between self-reported ethnic identity and education is significant at 0.01, but the contingency coefficient of 0.157 indicates that it is very weak. Identification with nationality appears to increase with educational attainment. The weakness of the relationship is apparent when sex, marital status, age, and generation are

held constant. It is not significant at 0.01 for any values of these variables and only in some instances is it significant at 0.05. Though Canadian identification increases with education, other factors, such as generation, exert more influence on the dependent variable. Education's influence on identification is slight and its effects can only be considered in conjunction with other relevant variables.

Occupation

The null hypothesis for occupation and ethnic identification cannot be rejected at 0.05. The professionals, who display the highest degree of Canadian identification, are followed by the blue collar workers, who, in turn, are followed by the white collar employees. The differences in the percentage of Canadian identifiers between occupational classes are small: the largest spread is eight percent. The classification of occupations is probably too general to detect any effects on ethnic identification.

Income

Hypothesis 8 stated that income would be related to ethnic identification. The hypothesis was tested separately for married and unmarried respondents, because the Edmonton Area Study collected information on total household income and not individual income. For single respondents the null hypothesis is not rejected; whereas, for married respondents a weak relationship exists between the variables ($p \leq 0.01$,

C=0.188). Married respondents are more likely to report high income than are single respondents. Among the single individuals 13.9 percent were in the highest income bracket; correspondingly, 37.0 percent of the married ones were in the highest category. The middle income bracket contains 42.3 percent of the single respondents and 49.4 percent of the married individuals.

C. Summary

Generation, father's primary language, and religion exhibit relationships of moderate strength with ethnic identification that are in certain instances influenced by the levels of other variables when these are held constant. Education and income (married respondents) are significantly related to self-reported ethnic identity, but the association is weak. Respondents who identify themselves as Canadian are usually third or fourth generation citizens, better educated, Protestant, their fathers spoke English, and if married tend to have higher incomes. Respondents identifying with their ethnicity are generally first generation or possibly second generation Canadians, less educated, Catholic, their fathers did not speak English, and if married have lower incomes. Also, the measures of the socioeconomic variables and age displayed certain inadequacies. Table 4.8 summarizes the results of the chi-square tests of association for the eight hypotheses that were formulated in Chapter II.

TABLE 4.8: ETHNIC IDENTIFICATION IN THE EAS SAMPLE

VARIABLE	x^2	p	C
Generation	83.70	0.0000	0.399
Sex	0.26	0.8720	0.012
Age	0.41	0.9100	0.031
Language	103.7	0.0000	0.441
Religion	37.29	0.0000	0.279
Education	11.24	0.0036	0.157
Occupation	5.17	0.0750	0.124
Income (single)	3.19	0.2025	0.151
Income (married)	9.66	0.0080	0.188

V. Analysis and Comparison of Results: The Self-Identification Study Data

This chapter parallels Chapter IV in organization. The background characteristics of the sequential sample are presented first, followed by the results of the tests of the eight hypotheses. Detailed discussion of the results is avoided where the Self-Identification Study gave results identical to those of the Edmonton Area Study. The emphasis is on comparing the findings of the two surveys.

A. Background Characteristics of the Sample

Some background characteristics of the SIS sample are summarized and compared with the census in Table 5.1. Comparison with Table 4.1 indicates that the EAS and SIS samples are similar in age, marital status, and birthplace, but differ with respect to sex, religion, and education. The SIS sample contains 10 percent fewer males: the EAS reports four percent more and the SIS five percent less males than does the 1976 census. The 6.3 percent of respondents in the SIS sample with degrees is 10 percent less than the EAS figure, while the 55.2 percent in the high school completed or some university category is eight percent higher than the EAS value. The SIS sample is overly Catholic with 13.3 percent more than the 28 percent found in the EAS sample. The SIS sample contains 7.9 percent fewer Protestants and 5.4 percent fewer respondents of *other* religions. The language questions on the surveys are not comparable. The

TABLE 5.1: A COMPARISON OF THE SELF-IDENTIFICATION STUDY WITH THE CENSUS

VARIABLE	VALUE	SIS[1]	CENSUS
Sex	male	44.2%	49.7%[2]
Age (median)		33.0	37.1[2]
Marital status	single	21.6%	29.3%[2]
	married	64.6%	62.3%
	other	13.8%	7.9%
Religion	Protestant	35.9%	55.1%[3]
	Catholic	41.3%	36.2%
	Other	22.8%	8.7%
Birthplace	Canada	74.2%	80.9%[3]
Language: Mother tongue	English	67.4%	76.7%[2]
Language most often spoken at home	English	89.9%	90.3%[3]

[1]There are 190 respondents in the sample.
[2]1976 Census of Canada (Statistics Canada, 1978)
[3]1971 Census of Canada (Statistics Canada, 1974)

SIS proportion for individuals speaking English at home is within one percent of the census value of 90.3 percent, but the proportion with English mother tongue is nine percent less than the census figure. In Chapter VI some of these differences are scrutinized more closely.

B. Ethnic Identification in the SIS Sample

Generation

Table 5.2, the crosstabulation of ethnic identification by generation, also shows the proportion of respondents in each generation. The SIS sample contains six percent fewer respondents in the second generation than does the EAS sample. The other generations are within two percent of the EAS values.

As for the EAS, the null hypothesis is rejected at 0.01, but in the SIS sample the relationship between generation and identification is weaker. The examination of Tables 4.2 and 5.2 reveals that 12 percent more immigrants replied Canadian, while eight percent fewer third generation respondents and 15 percent fewer fourth generation respondents replied Canadian to the ethnic identity question in the SIS interview. When the French-Canadians are excluded, the level of Canadian identification in the fourth generation rises to 68.4 percent. Again, most of the chi-square is attributable to the immigrants (approximately 70 percent) and Canadian identification increases with each successive generation (if French-Canadians are not considered in the fourth generation). Difference of means tests comparing the immigrant generations of each survey are not significant with respect to the variables age at immigration and length of residence in Canada; thus, the source of the larger number of Canadian identifiers in the

TABLE 5.2: ETHNIC IDENTIFICATION BY GENERATION, SIS

ETHNIC IDENTITY	GENERATION				TOTAL
	First	Second	Third	Fourth	(row)
Canadian	16 (32.7)'	24 (58.5)	36 (65.5)	26 (57.8)	102 (53.7)
Non-Canadian	33 (67.3)	17 (41.5)	19 (34.5)	19 (42.2)	88 (46.3)
Total [column]	49 [25.8]	41 [21.6]	55 [28.9]	45 [23.7]	190

x^2=12.47 p=0.0059 C=0.248
'The figures in parentheses and brackets are percentages.

SIS sample is probably not one of these variables.

This relationship was examined while sex, marital status, education, and religion were controlled. The introduction of intervening variables into the analysis had two drawbacks with the smaller SIS sample. First, cells with expected frequencies of five or less occur repeatedly with the outcome that the chi-square statistic is usually less reliable. Second, when the row and column frequencies of a *sxt* table are small, the shift of a few cases between cells of the same row or column alters the row or column percentages substantially. Consequently, any conclusions based on such tables must be made cautiously and can only be tentative. Bearing these points in mind, the following results are only provisional. Because the relationship is weak for this sample, the tests with control variables employed a significance level of 0.05.

When each sex is examined separately, the pattern of identification is the one shown in Table 5.3. The association between identification and generation is significant for males, but not for females. Male and female immigrants are almost identical; whereas, in the other generations males display a higher degree of Canadian identification. The percentage for non-immigrant women is almost constant across generations and it would have been constant for non-immigrant males except for the higher identification with nationality among third generation men. When French-Canadians are eliminated, 75 percent of the fourth generation males are Canadian, while 64 percent of the women in this group are Canadian. Examination of Tables 4.3 and 5.3 uncovers some interesting differences between the samples. First, in both, a similar proportion of immigrant females were Canadian identifiers, but among the male immigrants there are twice the proportion of Canadian identifiers in the SIS sample. Yet, the immigrant men in the sequential sample (20.6 years) have lived in Canada a year less than have those in the EAS sample (21.9 years). Further, the SIS males arrived in Canada at a mean age of 20, while the EAS males arrived at 23. On the surface these differences do not appear large enough to account for the variation between samples. Second, among males in the non-immigrant generations, those in the EAS sample are more likely to be Canadian than those in the SIS sample. Third, in the EAS data Canadian identification increased among

TABLE 5.3: IDENTIFICATION AS CANADIAN BY GENERATION AND SEX, SIS

GENERATION	SEX	
	Males	Females
First	32.0% (25)'	33.3% (24)
Second	64.3% (14)	55.6% (27)
Third	76.2% (26)	55.2% (29)
Fourth	63.2% (19)	53.8% (26)
All Respondents	58.3% (84)	50.0% (106)

'the number of males or females in that generation

females with each generation, while in the SIS sample it is almost stable for the native born generations. Both sets of data suggest that the relationship is stronger for men and that identification with nationality is higher for non-immigrant males than their female counterparts. Whether it increases with each generation is not clearly confirmed by the data. Only the females in the EAS displayed this tendency; whereas, in the other subsamples Canadian identification jumped sharply between the first and second generations and then levelled off.

The relationship is significant only for married respondents at 0.05; whereas, in the EAS sample it held for

both single and married individuals. The weakness of the relationship and some small marginal frequencies may explain why it is not significant for single respondents.

The relationship between ethnic identification and generation is not significant for any level of education. The 12 university educated respondents are too few to permit analysis and the crosstabulation for the high school incomplete category includes some small marginal frequencies. The differences among generations in the high school complete group are relatively small with the exception of the immigrants.

Finally, when religion is held constant, the relationship is not significant: within religious groups there is little variation among generations. In accordance with the EAS data, Protestants tend to reply Canadian, while Catholics reply with ethnic backgrounds. The other category was too small for any elaboration.

Though the results support Hypothesis 1, some differences exist between the samples. The relationship is weaker in the SIS sample and does not hold in all instances when other factors are held constant.

Demographic Variables

The variables sex and age do not have a significant influence on ethnic identification ($p \leq 0.01$). The null hypothesis for sex or for age cannot be rejected. The sex and age groups show almost no variation in the degree of Canadian identification.

Cultural Variables

Language

For reasons discussed in Chapter III mother tongue replaced primary language on the SIS questionnaire. Hypothesis 4 is tenable ($p \leq 0.01$): children of fathers whose mother tongue is English are often Canadian identifiers. The relationship is weaker than that for primary language in the EAS sample. The differences in the questions do not justify making further comparisons.

The tests of association between mother tongue and ethnic identification (Table 5.4) is not significant at all levels of the intervening variables. It does hold for both sexes and for all levels of education except the highest (too few cases). The relationship is also significant at 0.01 for married respondents, Catholics, and those individuals with no religious preference. The relationship is weak for single respondents: it is barely insignificant at 0.05. Protestants simply identify themselves as Canadian regardless of father's mother tongue.

Religion

Significant differences ($p \leq 0.01$)in ethnic identification do occur between religious groups (Hypothesis 5). A comparison of Tables 4.7 and 5.5 indicates that the relationship is about the same strength for both samples. The Catholics in the SIS sample reply Canadian six percent more often than do those in the EAS sample. The respondents

TABLE 5.4: ETHNIC IDENTIFICATION BY FATHER'S MOTHER TONGUE

ETHNIC IDENTITY	LANGUAGE English	Non-English	TOTAL
Canadian	67 (70.5%)	35 (37.2%)	102 (54.0%)
Non-Canadian	28 (29.5%)	59 (62.8%)	87 (46.0%)
Total	95	94	189

x^2=19.76 p=0.0000 C=0.317

TABLE 5.5: ETHNIC IDENTIFICATION BY RELIGION, SIS

ETHNIC IDENTITY	RELIGION Protestant	Catholic	Other	TOTAL
Canadian	48 (70.6%)	32 (41.0%)	21 (48.8%)	101 (53.4%)
Non-Canadian	20 (29.4%)	46 (59.0%)	22 (51.2%)	88 (46.6%)
Total	68	78	43	189

x^2=13.23 p=0.0013 C=0.256

in the residual category in the SIS sample are nine percent lower on identification with nationality.

As with the earlier data, the relationship did not remain significant when other variables were held constant. In the EAS data the relationship was significant for both sexes, though stronger for females, but in this data set it persists only for the males. As in the previous survey the relationship holds only for married individuals and its strength stems from the strong identification with Canada

among Protestants. When educational level is controlled significant results occur only for respondents who have finished high school. The other educational groups contain an insufficient number of cases to reach any firm conclusions. The finding for the high school complete groups is in accord with that of the previous chapter. Generation was not treated as an intervening variable, because a 2x3x4 table would contain too many cells with inadequate theoretical frequencies.

Socioeconomic Variables

Education

The tests of association lead to the rejection of Hypothesis 5 that education influences ethnic identification. The proportion of Canadian identifiers increases from the lower to the higher educational level, but the university educated comprise only a handful of respondents and thus, the conclusion is only suggestive. The relationship was significant, but weak for the EAS data and it is even weaker for the SIS data.

Occupation

As for the previous sample, Hypothesis 6 is not tenable and the null hypothesis of no relationship between occupation and ethnic identification cannot be rejected at 0.01. The three occupational classes have approximately the same proportion of Canadian identifiers.

Income

Though a significant, but weak relationship was present for married respondents in the EAS sample, none was present in the SIS sample between income and ethnic identification for either marital status.

C. Summary

The outcomes of the chi-square tests of association are set forth in Table 5.6. In the SIS data generation, language, and religion were not as strongly associated with ethnic identification as they were in the EAS data. Neither study indicated significant relationships between self-reported ethnic identity and sex, age, and occupation. When intervening variables were introduced into the analysis of the statistically significant relationships, some inconsistencies between the surveys appeared. Explanations can be offered for some of these differences, but others require more information and study. A difficulty with the SIS sample was that in a number of instances its small size made it unsuitable for analysis by chi-square tests of association.

TABLE 5.6: ETHNIC IDENTIFICATION IN THE SIS SAMPLE

VARIABLE	X^2	p	C'
Generation	12.47	0.0059	0.248
Sex	0.10	0.3185	0.083
Age	0.39	0.8223	0.046
Mother Tongue	19.76	0.0000	0.317
Religion	13.23	0.0013	0.256
Education	2.05	0.3600	0.103
Occupation	3.40	0.3330	0.133
Income (single)	0.59	0.7462	0.100
Income (married)	0.10	0.9959	0.008

'Pearson's contingency coefficient

VI. A Methodological Comparison of the Surveys

In this chapter the methodologies of the Edmonton Area Study and Self-Identification Study are examined. The discussion focuses on five areas: (i) sampling design, (ii) the representativeness of the samples, (iii) the sequential tests used in the SIS survey, (iv) administration of sequential sample survey, and (v) the relevance for the substantive findings.

A. Issues of Sampling Design

The SIS survey replicated the EAS survey in as many ways as possible, but unfortunately all the divergencies could not be eliminated. Time is one such factor: a two year lag exists between the administration of the surveys and during this period the population grew and possibly changed. Personal interviews were conducted in both surveys; thus, the response rates -77 percent in the SIS and 80 percent in the EAS- were similar and are unlikely to be a source of any differences. Also, the surveys used different sampling frames. The EAS sample was selected from the reverse telephone directory and the SIS sample was drawn from the city census tapes. The city census tapes are easy to use and save time. Because the sampling frames probably overlap to a large extent, this is not likely to cause serious problems.

The consequences of the stratification procedures used

in the surveys are potentially more important.[31] The EAS stratified enumeration areas on the basis of income; whereas, SIS stratified census tracts on the basis of mother tongue and birthplace. The table in Appendix C shows that certain strata contained few census tracts and consequently only a small proportion of the population. Because the maximum 30 interviews were obtained, the sample proportion exceeds the proportion of the population actually in these strata.

Table 6.1 shows that in the SIS sample three strata contain a disproportionate number of respondents. From the census data it is evident that strata I and VI number more respondents, while stratum V contains fewer than would be expected. Certain combinations of mother tongue and birthplace are more probable than are others. A goodness of fit test of the observed sampling distribution to the one determined from the census data yields a highly significant chi-square. The three discrepant strata account for 93.6 percent of the chi-square, but 63.3 percent of the chi-square is contributed by stratum I. Nevertheless, there is some agreement in findings of the surveys and the difficulties originating with the stratification procedure are possibly modest. The two surveys include almost identical proportions of immigrants and Canadian identifiers. To an extent, strata I and VI are complements

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[31]These stratification procedures were described in Chapter III.

TABLE 6.1: DISTRIBUTION OF CASES ACROSS STRATA

MOTHER TONGUE	Low			High			NEW AREAS
FOREIGN BORN	Low	Med	Hi	Low	Med	Hi	
STRATUM	I	II	III	IV	V	VI	VII
SIS Sample	15.8[1] (30)[2]	10.5 (20)	15.8 (30)	15.8 (30)	10.5 (20)	15.8 (30)	15.8 (30)
Population in each strata	3.6[3]	13.6	11.0	17.5	26.4	7.2	20.7

$X^2 = 123.84$ $\alpha = 0.01$
[1]percentage sample in each strata
[2]number of cases in each strata
[3]census figure for percentage of population in each strata

and thus, compensate for each other's discrepancies. A more representative sample may have been obtained by merging strata I and VI with adjacent strata or by setting a higher maximum sample size for the sequential tests in strata V and VII and lower one for strata I and VI. Unfortunately, the available research funds limited the total sample size as well as the degree to which sample size could be varied within strata.

B. Some Comparisons of the Two Surveys

Goodness of fit and difference of proportion tests were used to establish where the samples diverged. Table 6.2 displays the results of three difference of proportion tests. The samples are almost identical in composition on the birthplace and ethnic identification variables, but differ on sex. In both surveys the percentage of Canadian

TABLE 6.2: DIFFERENCE OF PROPORTIONS SIS AND EAS SAMPLES

VARIABLE	SAMPLE VALUES EAS	SIS	*z*	*p*
Sex (males)	0.538	0.442	2.20	0.05
Ethnic Identity (Canadian)	0.562	0.537	0.61	ns[1]
Birthplace (Canada)	0.761	0.742	0.51	ns

[1]not significant at 0.05

born is approximately five percent less than reported in the census. A significant difference in the proportion of males in the two samples was found, but tests between each sample value and the census figure indicate a barely significant difference at 0.05 only for the EAS-census pair. Earlier it was noted that the EAS interviewers were very successful in completing interviews with males. There is one other consideration; in six of the seven enumeration areas randomly selected in the SIS survey the proportion of female residents was over 50 percent and in one case it was 58 percent. Therefore, obtaining a sample less than half male is not surprising. Even taking this into account the proportion of males in the SIS sample is low.

In Table 6.3 the results of seven goodness of fit tests are displayed along with the major contributor to the

TABLE 6.3: x^2 GOODNESS OF FIT TESTS

VARIABLE	x^2	p	MAJOR CONTRIBUTOR[1]
Generation	3.78	ns[2]	
Marital Status	0.79	ns	
Income	3.47	ns	
Age	6.98	0.05	> 60 years
Education	13.78	0.01	university
Religion	16.06	0.001	Catholics
Occupation	29.39	0.001	Professionals White collar

[1]category accounting for most of the x^2
[2]not significant at 0.05

chi-square when the test proved significant. These tests determine whether the SIS distribution of cases across categories of a variable corresponds to the distribution based on the EAS data. The distributions for four of the variables do not conform, but not all these differences are equally important. A deficiency of respondents over sixty years of age in the sequential sample resulted in a barely significant difference. The percentage 10.5 is 6.3 percent below the value recorded for the EAS and 5.3 percent beneath the census figure. Similarly, the chi-square with respect to education is significant at 0.01. The samples varied in the percentage of respondents who had completed university: 6.3

percent in the SIS survey and 16 percent in the Area Study. The census proportion for this group is nine percent, but the census uses a slightly different classification. Further, a comparison with the census suggests that the sequential sample has an excess of individuals in the high school complete or some university category. The value of 55.2 percent in the SIS survey almost matches the census figure of 57.5 percent. The latter value is for the population not attending school and it is high because it includes individuals who did not finish high school. The census category contains those with grades 11 through 13. A more serious disparity is the disproportionately large number of Catholics in the SIS survey. The census insists that respondents specify a denomination; whereas, the surveys did not. According to the census 36.2 percent of the popualtion is Catholic, but 41.3 percent of the SIS sample reported this affiliation. The major discrepancy is that the proportion of Protestants (0.551) is underestimated by 0.20. Finally, the census and the two samples are composed of about the same proportion of blue collar workers (33 percent). Professionals account for 21.5 percent of the population, but their proportion is 12 percent higher in the EAS sample and six perecent lower in the sequential sample. Consequently, the EAS has fewer white collar employees while the SIS has more than the census.

The latter three differences possibly occurred because of a random selection comprised of census tracts of lower

socioeconomic status. In addition the disproportionate number of Catholics may be related to the stratification scheme, ie., especially, if religion is associated with the stratification variables. The tests of association have a significant chi-square for the relationships between religion and birthplace ($p \leq 0.05$) and between religion and respondent's mother tongue ($p \leq 0.001$). These two relationships are weak. Further, occupation is weakly associated with birthplace, while education is related to mother tongue.

C. The Sequential Tests

The sequential hypotheses were stated in Chapter 3. The first hypothesis predicted that strata I,IV, and V would contain a disproportionate number of respondents replying Canadian and the second hypothesis stated the contrary for strata II,III, and VI. For stratum VII, the newly developed areas, neither was more appropriate; therefore, both were tested. The outcomes of the sequential tests are shown in Tables 6.4 and 6.5.

Only the tests for strata II and V terminated before the maximum number of interviews were completed. In both cases after 20 interviews the number of Canadians equalled the acceptance number indicating that the null hypothesis should be accepted. The proportion of Canadians is closer to 0.485 in stratum II and to 0.562 in stratum V. When a test is stopped arbitrarily, a decision can be made using the

TABLE 6.4: OUTCOMES OF THE SEQUENTIAL TESTS SET I

UNITS SAMPLED	ACCEPTANCE NUMBER	VALUE OF d_m IN EACH STRATUM				REJECTION NUMBER
m	a_m	I	IV	V	VII	r_m
5		2	1	0	3	12
10	1	5	5	3	8	15
15	4	10	10	6	10	18
20	7	13	13	7[1]	11	21
25	10	15	17		12	24
30	13	18[1]	21[2]		14[1]	27

[1]accept H_o [2]reject H_o

TABLE 6.5 OUTCOMES OF THE SEQUENTIAL TESTS SET II

UNITS SAMPLED	ACCEPTANCE NUMBER	VALUE OF d_m IN EACH STRATUM				REJECTION NUMBER
m	a_m	II	III	VI	VII	r_m
5		2	3	3	3	12
10	0	2	6	6	8	15
15	2	3	10	8	10	10
20	5	5[1]	12	9	11	20
25	8		14	14	12	22
30	10		18[2]	19[2]	14[1]	25

[1]accept H_o [2]reject H_o

following rule (Wald,1973:105):

1. if $d_m < (a_m + r_m)/2$, then accept H_o (reject H_1),
2. if $d_m > (a_m + r_m)/2$, then reject H_o (accept H_1).

The disadvantage of the rule is that d_m does not vary much from the average of the acceptance and rejection numbers. The value of d_m already lies in the zone of indifference and any decision based on this rule will probably be a borderline one. Applying the rule to the remaining five strata gives these results. The null hypothesis is rejected in stratum IV and the the degree of Canadian identification for strata I,III,V, and VI appears to be close to the value for the EAS sample, ie., the null hypothesis is accepted. Strata II and VII have less Canadian identification and stratum IV has more than does the EAS sample.

The EAS value was used, because it was hoped, in areas where identification was radically different, that sampling would terminate quickly. Consequently, fewer observations would be made in these areas and the sample would remain representative. If the EAS proportion is a good estimate of the Canadian identifiers in Edmonton, then the sequential tests should help ensure a relatively unbias sample, variation between areas would remain high.

This application can be improved in two ways. First, reducing the number of strata would permit the selection of a larger sample from the remaining ones. The sequential tests would then have a better chance of terminating before being stopped arbitrarily. Second, a single sequential

hypothesis based on confidence limits for the EAS value would have eliminated the necessity to distinguish between areas of high and low identification with nationality. The hypothesis would be of the form:

H_0: $p_0 = 0.562 - x$ $\qquad$ H_1: $p_1 = 0.562 + x$

where x represents a value equal to some confidence limit of the EAS proportion.

D. Administering a Sequential Sample Survey

The administration of a survey using a sequential design possesses some distinctive features. First, a small amount of additional time and effort is required to establish the hypotheses for the sequential tests and to determine the boundaries for the three zones of preference. When interviewing actually begins, the tests are easily applied. The binomial SPRT, which was used here, simply involves counting the occurrences of a characteristic for every m complete interviews.

Second, the interviews must be completed in the order of selection. In a fixed size sample an equal number of households is assigned to each interviewer and the order of completion is usually irrelevant. Because its size varies randomly, in a sequential sample the first set of m cases must be interviewed before the second set of m cases are attempted. The sequence in which the interviews are gathered must be identical to the order in which respondents were selected. This requirement can inflate the costs of already

expensive face-to-face interviews. To minimize costs interviewers were assigned a set of potential respondents who live clustered in a small area, preferably near the interviewer's residence. The number of trips and travel time necessary to collect the interviews is reduced. There are other ways around this difficulty. When a minimum number of interviews are required, these are collected in the usual manner and the remainder are gathered *m* at a time until the sequential test reaches a decision. The acceptance and rejection numbers may indicate a certain number of cases are required before the test has a chance of terminating. This first set of observations may be collected all at once and any additional ones are collected in groups of *m*. Testing after every ten completed interviews is advantageous when a large sample from a dispersed population is gathered. Stratification can also be an advantage; in the SIS interviewers who lived near the selected enumeration areas were hired. The enumeration areas are small and a relatively large number of interviews were completed in each. The sequential tests were performed for each strata allowing interviewing to proceed in all areas simultaneously. The difficulties associated with maintaining a certain sequence in gathering interviews is the major drawback of sequential sampling in surveys requiring personal interviews.

E. Sequential Sampling and the Substantive Findings

The results of the tests of association for the EAS and SIS data give fairly similar results, but there are some divergencies. The tests for education and income were the only ones that were not consistent. The weak relationship of the EAS data is not present in the SIS data. Some differences appear in the analysis involving the variables generation and religion. These might be better understood if a formal model of ethnic identification that included other relevant variables was studied. Some differences between the surveys are a function of the stratification scheme, but others occur because complex tests of association require large samples.

VII. Conclusion

In this chapter the findings presented in the previous three chapters are first summarized and then discussed. Some shortcomings and extensions of this research are also mentioned.

A. Ethnic Identification

Hypothesis 1 was found tenable in both the tests for the Edmonton Area Study data and for the Self-Identification Study data. Generational status does influence self-reported ethnic identity, but the relationship appears to originate in the immigrant generation. The differences between the first generation and the non-immigrant generations are greater than any differences between the three non-immigrant generations. A supplementary prediction of Hypothesis 1 was that Canadian identification would increase with each successive generation. The relative frequency of the occurrence of the reply Canadian in each generation suggests that this is the case in both samples, but on further examination the situation appears more complex. First, this tendency and the relationship as a whole are weaker in the SIS sample. Second, when other variables are held constant, the results are no longer consistent. The variable sex had the most noteworthy effects on identification. In both samples the link is weaker for females. Among males identification as Canadian increased dramatically from the first to second generation, and then, remained fairly

stable. Females in the EAS sample were the only group that displayed a substantial increase in Canadian identification with each successive generation. In the SIS data the differences in identification among females of the non-immigrant generations were virtually non-existant. When religion and education were controlled, the trend was not always exhibited. In the EAS sample the degree of attachment to nationality fluctuated between generations for Catholics and in the highest educational category the non-immigrant generations contained equally high proportions of Canadian identifiers. The SIS had too few respondents with higher education to reach any conclusion. Within the religious groups Protestant and Catholic, there was only limited variation between generations. The relationship between ethnic identification and generation is complex because other variables exert their influence. The previous chapters have indicated that among immigrants age on arrival in Canada and the length of residence are important variables. To more clearly understand this relationship, these and other variables should be introduced into a more complete model of ethnic identification. For example, among married respondents the birthplace and the self-reported ethnic identity of the spouse may be relevant. Further, more detailed information of various ethnic characteristics of the respondent's parents is potentially important.

The second hypothesis was not supported by the results of the statisitical tests for either sample. The variable

sex makes no statistically significant contribution to the ethnic identification of the immigrant subsample or of the entire sample. Similarly, no support exists for Hypothesis 3, which stated that a negative association would be found between age and the number of Canadian identifiers. There was little variation among age groups. In addition, age and generation are linked, ie., they are not independent.

Hypotheses 4 and 5, which predicted a link between self-reported ethnic identity and the cultural variables language and religion, are tenable. In the EAS sample primary language influenced identification: respondents with English speaking fathers are more frequently Canadian identifiers. The relationship was of moderate strength and persisted for all categories of religion, education, and sex. In the SIS sample a mother tongue question replaced the one on primary language; nevertheless, it displayed a similar, though slightly weaker, association to self-reported ethnic identity. The only major point of variance was that Protestants replied Canadian regardless of their mother tongue. Generation was not held constant because fathers of third and fourth generation respondents are mainly English speaking. The fifth hypothesis that Protestants identify with their nationality to a greater extent than do Catholics was supported. The relationship is weak in both samples. When other variables were controlled in the EAS analysis, the relationship did not persist for single or university educated respondents and held for only

the third generation; whereas, in the SIS analysis it did persist for females and single respondents. Generation was not controlled in the latter sample because the number of cases was too small.

Only in two of a possible eight instances were any of the three hypotheses concerned with the socioeconomic variables tenable; however, these were weak relationships. The SIS data did not support the view that high ranking on the socioeconomic variables would be associated with Canadian identification (Hypotheses 6, 7, and 8). In the EAS sample education was weakly associated with ethnic identification, but this relationship did not persist when control variables were introduced. In both samples occupation was not related to self-reported ethnic identity. The relationship between income and the dependent variable was measured separately for single and married respondents to control for households with two income earners. The null hypothesis was rejected only for the married respondents in the EAS data. In general the two surveys provide fairly similar results in the tests of the hypotheses. They diverged when a statistically significant, but weak relationhip in the EAS survey was no longer significant in the samller SIS survey.

B. Sequential Sampling

The difficulties associated with this application of sequential sampling have been discussed at some length in Chapter VI; therefore, only the important points will be reiterated here.

The sequential sample is reasonably representative of Edmonton's population, even when compared to the EAS sample. There are a number of points were the surveys differ. The sequential sample under-represents males, but this is possibly, in part, a function of the diligence of the interviewers in attempting to complete interviews with men when the opportunity arose. Interviewers reported that in some instances husbands insisted that the wives answer the questionnaire. The SIS sample contained more Catholics, white collar employees, and individuals who had completed high school, but fewer professionals and respondents who had attended university than does the EAS sample. These divergences appear to result from the choice of stratification variables, rather than from sequential sampling itself. Religion is related to both stratification variables, while occupation and birthplace are weakly associated and similarly, education is related to the mother tongue of the respondents.

The major difficulty in administering a sequential survey is ensuring that interviews are completed in the proper sequence. Interviewers require a sufficient number of households to call on, to ensure that their efforts are

worthwhile, but a large allotment could encourage haphazard completion of the questionnaires. In a large scale survey with a long questionnaire, where only two or three questionnaires can be completed in the evening, interviewers only need a few addresses to call and thus, checking the way interviews are gathered should be easier.

The application of sequential sampling could have been improved. First, the strata with a small proportion of the population should have been merged with adjacent strata and thus, a larger sample size would have been attainable within the remaining strata. Second, a single sequential test could have been applied to all the strata rather than having separate tests for strata expected to contain a high proportion of Canadian identifiers and those expected to have a low proportion. The necessity of conducting both tests for the stratum labelled new areas would have been eliminated. The third point is more a caution than it is an improvement. Because the variables were primarily nominal, the chi-square tests of association were used in the hypothesis testing, but the chi-square tests have some drawbacks. The categorization of variables and the values of the actual and expected cell frequencies, especially the latter, lead to difficulties, not serious for the analysis of the EAS data, but quite problematic for the smaller SIS sample. Some categories simply contained too few cases. The researcher must note the requirements of a statistical technique in planning his project and determine its

suitability to the type of investigation he wishes to undertake. Though a sample of 190 is sufficient to test the hypotheses, it is rather small when intervening variables are introduced. Even the large sample can exhibit these limitations under certain circumstances.

C. Discussion

First, specific points related to the findings of this study are discussed below. The discussion gradually proceeds to issues of broader scope.

These findings appear to fit with those reported by Mackie (1978:126). She found a strong degree of identification with ethnicity among foreign-born Canadians. In the EAS and the SIS samples the immigrant generation displayed the same preference. The present findings are also in accord with Mackie's conclusion that among Canadian born respondents sex, age, and education are not related to ethnic identification. Because Mackie's research attempts to answer a different question and is not identical to this study, extensive comparisons between the studies are not warranted.

A number of the hypotheses formulated in Chapter II stem from Gordon's (1964) model of assimilation. Are the findings in accordance with his model? The answer is *partly*. In Gordon's model the cultural variables, language and religion, influence the extent of identificational assimilation. The data sets analyzed here support the

hypotheses predicting a relationship between these two variables and ethnic identification. His model and the data diverge when measures of structural variables are considered. A high degree of structural assimilation should be associated with a low degree of ethnic identification, but in only two of the eight instances was the H_o of no relation between ethnic identification and the socioeconomic variables rejected. In both cases the relationship is weak. The socioeconomic variables education, income, and occupation were assumed to be indicators of structural assimilation, but there are a number of difficulties. First, these are not the best indicators of structural assimilation, they only measure one dimension of the concept. Neither the EAS nor the SIS survey contained any measures of the respondents primary relationships that Gordon emphasizes in his model. The research into ethnic identification could be enhanced if the effects of membership in ethnic and non-ethnic organizations and associations, friendship and residence patterns, closeness to kin, and preference in recreational and social activities were studied. Second, the categorization of the socioeconomic variables for the tests of association creates three large classes for each variable. Consequently, a large amount of information is lost. Third, the effects of education, income, and occupation are probably intertwined and a better approach would have been to use a composite measure of socio-economic status -like the Pineo-Porter

index. Mackie (1978:126) reports significance in the relationship between socio-economic status and interest in nationality and ethnicity. Considerable effort would have been required to evaluate the socio-economic status of the 642 respondents in the two surveys, but it may have been a fruitful exercise.

In both samples at least 25 percent of the respondents in the third and the fourth generation identified with their ethnic origins. Despite these groups being predominantly English speaking, some ethnic identification persists. Isajiw and Gans have expressed ideas on ethnic identification in these generations. The data suggest that there is a significant degree of ethnic identification within the older generations, but it cannot confirm whether it is the kind Gans terms *symbolic ethnicity*. Thus, the present research could be extended to test hypotheses derived from Gans' (1979) discussion of the concept and could also attempt to answer how ethnic identification differs between members of the immigrant and second generations and the older generations.

One of the interesting findings was the effect of the variable sex when it was introduced as a control variable. A statistically significant relationship did not necessarily remain so for separate tests of association with males and females. Its effect on the relationship between ethnic identification and generational status is an example. These differences may be related to the manner in which males and

females are socialized; therefore, the differences between the sexes merit further investigation.

Another concern is the reliability and the validity of the measure of ethnic identification. The issue of reliability is more easily addressed than is the issue of validity. Comparison with other instances where measures of ethnic identification have been employed should give an indication of its reliability. Reitz (1980:119) used a similar measure and reports the following degrees of attachment to ethnic labels: immigrant generation (79.4 percent), second generation (40.9 percent), and third generation (30.4 percent). These values are close to those reported for the EAS and SIS samples with one exception: among the SIS immigrants attachment to ethnic origins is 12 percent lower than either Reitz's or the EAS figure. In Chapter V this difference was discussed. The validity of the measure is more difficult to establish -it may not be measuring what it was intended to measure. The format of the ethnic identification question possibly encourages the selection of ethnic labels. An open-ended question is a more appropriate indicator. There are differences: in the 1978 EAS 39.5 percent of the respondents selected Canadian, but in the 1979 EAS 57.3 percent of them answered Canadian to an open-ended question. If English-Canadian and Canadian-English categories are grouped with Canadian, then the two figures are within three percent of each other. An alternative approach is to develop a composite index of

ethnic identification that in addition to preferred ethnic label uses measures of saliency of ethnicity to classify persons as ethnic identifiers. A third approach is to ask respondents to describe themselves and to note if they use ethnic labels. This may give an indication of the importance of ethnicity. Ryder (1955) adequately discusses many issues related to the validity and reliability of origin statistics and his points have bearing on measuring ethnic identification. Porter (1980:333) suggests that "in Canada ethnicity may be a statistical artifact arising from census definitions and procedures." The census insists on tracing ethnic origins; and thus, may foster some degree of ethnic identification.

One major improvement on the present research would be to test a model fully elaborating the relationships between various social factors and ethnic identification. It might resemble the one Goldlust and Richmond have proposed for immigrant adaption in Canada, *mutatis mutandis*. It could even be a causal model. The wording of some of the hypotheses presented in Chapter II implies a causal connection between the variables. More sophisticated analysis is required to establish firmly that the relations are causal. The statistically significant relationships are best interpreted in non-causal terms.

Usually studies of ethnicity do not treat the groups of British origin as ethnic groups, because of their dominant role in the development and building of Canada. Yet, some

activities and organizations of this segment of the population are ethnic in character, though not usually viewed as such. The celebration of Robbie Burns Day among Scottish-Canadians is an example. Therefore, an improvement in studying ethnic identification would be to separate the British population into its constituent groups and a native Canadian group.

The present research indicates that some differences in ethnic identification exist in Canadian society and that to some Canadians their ethnic identities are important. Possibly, the multicultural view of Canada is a realistic one, but it is difficult to assess from this study to what extent the multicultural policies of the federal government encourage ethnic identification and to what extent they reflect the Canadian reality. This appears to be an area open to further research. The situation may be more complex: only for a substantial minority does multiculturalism figure in their idea of Canada; whereas, the majority is indifferent to ethnic and multicultural issues. Consequently, the attitudes towards ethnicity and multiculturalsim are worthy of study. For example, how does generational status affect these attitudes. Ethnic identification could influence structural, political, and economic aspects of Canadian society, but it can also be influenced by changing circumstances. For some Canadians ethnic identification is important and is probably linked to their conception of the kind of country Canada is or should

be.

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APPENDIX A QUESTIONNAIRE

DEPARTMENT OF SOCIOLOGY

SELF-IDENTIFICATION STUDY

QUESTIONNAIRE

1980

1. Interviewer's Name _____

2. Census Tract _____

3. Enumeration Area _____

4. Interview I.D. No. _____

5. Date _____ Time of Interview _____

6. Length of Interview _____ Minutes

7. Address

8. Appointment Time _____

9. Call Backs _____

_____

_____

10. No Interview _____

_____

_____

1. Record respondent's sex.

   Male 1

   Female 2

2. What is your age?

   Respondent's age _____

3. What is your marital status?

   Response

   Single 1

   Married 2

   Common-law 3

   Divorced 4

   Separated 5

   Widowed 6

4. What is the highest level of education that you/your spouse have completed?

Response	YOU	YOUR SPOUSE
No schooling	01	01
Elementary - incomplete	02	02
- complete	03	03
Junior High - incomplete	04	04
- complete	05	05
High School - incomplete	06	06
- complete	07	07
Some college or university	08	08
Bachelor's degree	09	09
Master's degree	10	10
Professional degree or Doctorate	11	11
DK		88
NA		99
NR	00	00

5. What is your religious preference?

Response

None	01
Anglican	02
Baptist	03
Greek Orthodox	04
Jewish	05
Lutheran	06
Mennonite	07
Mormom	08
Pentecostal	09
Presbyterian	10
Roman Catholic	11
Salvation Army	12
Ukrainian Catholic	13
United Church	14
Other (specify) _____	15
NR	00

Now we have some questions about employment.

6. What is your current employment status?

Response

Employed full-time	1	
Employed part-time	2	
Temporarily unemployed	3	
Fully unemployed	4	GO TO Q8.
Retired	5	GO TO Q8.
In school	6	GO TO Q8.
Other _____	8	
NR	0	

7. During the past year, for how many months have you been employed?

Response _____ months (IF 12,GO TO Q9.)

8. Have you ever been in the labor force for a year or more?

Response

Yes	1
No	2 GO TO Q11.

9. What kind of work (do/did) you normally do?

   Occupation: _____

10. What kind of place (do/did) you work for?

    Industry: _____

ASK ONLY IF RESPONDENT IS MARRIED OR LIVING IN A COMMON-LAW RELATIONSHIP. OTHERWISE SKIP TO Q16.

11. What is your spouse's current employment status?

Response		
Employed full-time	1	
Employed part-time	2	
Temporarily unemployed	3	
Fully unemployed	4	GO TO Q8.
Retired	5	GO TO Q8.
In school	6	GO TO Q8.
Other _____	8	
NA	9	
NR	0	

12. During the past year, for how many months has your spouse been employed?

    Response _____ months (IF 12, GO TO Q14.)

13. Has your spouse ever been in the labor force for a year or more?

Response		
Yes	1	
No	2	GO TO Q16.

14. What kind of work (does/did) your spouse do?

    Occupation: _____

15. What kind of place (does/did) (he/she) work for?

Industry: _____

16. There are a number of ways that a person may describe himself -for example, as a teacher, an Anglican, a man, an American, a Democrat, a Californian, or a Rotarian. In what ways would you describe yourself?

Responses

1. _____
2. _____
3. _____
4. _____
5. _____

17. In what country were you born?

Response

A. You _____

B. Your father _____

His father _____

His mother _____

C. Your mother _____

Her father _____

Her mother _____

IF RESPONDENT WAS NOT BORN IN CANADA, ASK Q18 AND Q19.
OTHERWISE SKIP TO Q20.

18. At what age did you move to Canada?

Response _____ years old

19. Are you a Canadian citizen?

Response

Yes 1

No 2

20. State the mother tongue of:

Response

A. Yourself _____

B. Your father _____

C. Your mother _____

21. (SHOW CARD K) How would you define your ethnic identity?

Response _____

22. State the language you most often speak at home.

Response _____

23. Do you belong to any ethnic organizations?

Response

Yes 1

No 2

24. Do you agree or disagree with the following statement: My ethnic status is important to me.(SHOW CARD C)

STRONGLY DISAGREE					STRONG AGREE		DK	NR
1	2	3	4	5	6	7	8	0

25. Looking at CARD X, could you tell me which number comes closest to the total income of all the members of this household for this past year before taxes and deductions?

Under $2499	01	25000 - 27499	11
2500 - 4999	02	27500 - 29999	12
5000 - 7499	03	30000 - 32499	13
7500 - 9999	04	32500 - 34499	14
10000 - 12499	05	35000 - 37499	15
12500 - 14999	06	37500 - 39999	16
15000 - 17499	07	40000 and over	17
17500 - 19999	08	DK	88
20000 - 22499	09	NR	00
22500 - 24999	10		

APPENDIX B ETHNIC IDENTITY CARD

Ethnic Identities on Card Shown Respondents

Canadian - English 02
Canadian - French 03
Canadian - Ukrainian 04
Canadian - Italian 05
Canadian - German 06
Canadian - Hungarian 07
Canadian - Polish 08
Canadian - Swedish 09
Canadian - Norwegian 10
Canadian - East Indian 11
Canadian - Dutch 12
Canadian - Czech 13
Canadian - Japanese 14
Canadian - Chinese 15
Canadian - Indian 16
Canadian - Eskimo (Inuit) 17
Other 18

English - Canadian 19
French - Canadian 20
Ukrainian - Canadian 21
Italian - Canadian 22
German - Canadian 23
Hungarian - Canadian 24
Polish - Canadian 25
Swedish - Canadian 26
Norwegian - Canadian 27
East Indian - Canadian 28
Dutch - Canadian 29
Czech - Canadian 30
Japanese - Canadian 31
Chinese - Canadian 32
Indian - Canadian 33
Eskimo (Inuit) - Canadian 34
Other 35

English 36
French 37
Ukrainian 38
Italian 39
German 40
Hungarian 41
Polish 42
Swedish 43
Norwegian 44
East Indian 45
Dutch 46

Czech 47
Japanese 48
Chinese 49
Indian 50
Eskimo (Inuit) 51
Other 52

Canadian 53

APPENDIX C STRATIFICATION IN THE SIS SURVEY

THE ALLOCATION OF CENSUS TRACTS TO STRATA

VARIABLE	Proportion Foreign-Born			POPULATION
Mother Tongue Official Language	I (≤14.99%)	II (15.00-23.22%)	III (>23.22%)	Sub-total (Mother tongue)
I	Stratum I 68,69,72	Stratum II 17,19,39,46, 58,59,60,67, 70,71,73	Stratum III 14,21,34, 43,44,45, 54,55,56, 57,61,74	
(<79.99%)	(3.6%)[2]	(13.6%)	(11.0%)	130,103[1] (28.2%)
II	Stratum IV 1,2.02,4, 7,9,16, 25,26,27, 28,37,40, 41,65	Stratum V 3,8,10,12.01, 12.02,15,18, 20,24,29,31, 32,36,38,47, 48,49,50,51, 52,53,62,63, 64,66	Stratum VI 11,13,22, 23,30,33, 35	
(≥80.00%)	(17.5%)	(26.4%)	(7.2%)	235,801 (51.1%)
POPULATION Sub-total (Foreign born)	97,149[1] (21.1%)	184,511 (40.0%)	84,141 (18.2%)	365,801 (79.3%)
NEW AREAS[3]		Stratum VII 1,2.01,5,6,42, 75.01,75.02,76 77,78,90 (20.7%)		461,361 (100.0%)

[1]The number of persons living in census tracts belonging to a given value of the stratification variable.
[2]Percentage of the population contained in a stratum or in the marginals of the table.
[3]The newly developed residential areas that could not be stratified.

APPENDIX D SEQUENTIAL PROBABILITY RATIO TEST

The binomial SPRT (Wald,1973:90) used to test H_o: $p \leq p_o$ against H_1: $p \geq p_1$ is given by

$$\frac{p_1 m}{p_o m} = \frac{p_1^{dm} (1-p_1)^{(m-dm)}}{p_o^{dm} (1-p_o)^{(m-dm)}} \qquad (1)$$

where m is the number of observations and dm is the number of occurrences of a characteristic. The values of p_o and p_1 are those established in the null hypothesis and in the alternate hypothesis.

The values of the acceptance and rejection numbers, which separate the three zones of preferences for H_o, were calculated using the following formulas from Wald (1973:92-93):

$$am = \frac{\log \beta/(1-\alpha)}{A} + m \frac{\log(1-p_o)/(1-p_1)}{A} \qquad (2)$$

$$rm = \frac{\log(1-\beta)/\alpha}{A} + m \frac{\log(1-p_o)/(1-p_1)}{A} \qquad (3)$$

where $A = \log(p_1/p_o) - \log(1-p_1)/(1-p_o)$.

α and β were set at 0.05 and 0.20 for these tests. The decision rules are

1. reject H_o (accept H_1) if $rm \leq dm$,
2. accept H_o (reject H_1) if $am \geq dm$,
3. and continue sampling if $am < dm < rm$.

An estimate of the expected value of the sample size can be made for either hypothesized value of p.

$$Ep(n) = \frac{(1-\alpha)\log[\beta/(1-\alpha)]+\alpha\log[(1-\beta)/\alpha]}{p\log(p_1/p_0)+(1-p)\log[(1-p_1)/(1-p_0)]}$$

This function is the Average Sample Number (ASN) function for the binomial SPRT (Wald,1973:99).

APPENDIX E WEIGHTED AND UNWEIGHTED SAMPLES

The comparisons between the Edmonton Area Study and the Self-Identification Study surveys in Chapters V and VI are between unweighted samples. In the SIS sample the proportion of respondents in each stratum does not correspond to the population proportion; therefore, more accurate estimates and comparisons are obtained when appropriate weights for each stratum are used in calcualting sample means and proportions. The following formula from Cochran (1977:107) is used to re-evaluate some estimates of sample proportions (pst) originally calcualted for the SIS data.

$$p\text{st} = \text{SUM}[(W\text{h})(p\text{h})] \qquad (1)$$

where Wh = (Nh)/N.[32] The stratum is denoted by h and Wh refers to the stratum weight, which is simply the proportion of the population in stratum h, where Nh is the population of stratum h and N the total population.

Table A displays the census, EAS, and SIS proportions for the variables sex and religion with weighted and unweighted estimates for the SIS data. In Table A the proportion of males is lowest for the weighted SIS estimate, because two of the most populated strata are less than 40 percent male in the sample. The proportion is decreased since these strata are given more weight. In Chapter VI it was suggested that religion and the stratification variables are related. When the SIS values are weighed properly, the

---

[32] SUM refers to the summation for stratum one through stratum n.

TABLE A: SEX AND RELIGION

	Census	EAS	SIS[1]	SISw[2]
SEX: (male)	49.7%[3]	53.8%	44.2%	42.2%
RELIGION:				
Protestant	55.1%[4]	43.8%	35.9%	38.2%
Catholic	36.2%	28.0%	41.3%	38.0%
Other	8.7%	28.2%	22.8%	23.8%

[1]Unweighted estimate of the population proportion
[2]Weighted estimate of the population proportion
[3]1976 Census of Canada (Statistics Canada,1978)
[4]1971 Census of Canada (Statistics Canada,1974)

differences between the EAS and SIS percentages are smaller for each denomination, then for the unweighted comparison. The x^2 goodness of fit test between the distribution expected on the basis of the EAS data and the distribution observed in the SIS sample (weighted estimates of *p*st) for religion gives a x^2 of 9.45 and is significant at 0.01. This value of x^2 is considerably smaller than 16.06 ($p \leq 0.001$) obtained for the unweighted sample.

Hypothesis 6, which was concerned with the influence of education on ethnic identification was retested using weighted proportions in the x^2 test of association. Originally, it was significant at 0.01 for the EAS sample, but not significant at 0.05 for the SIS data. Table B is the crosstabulation of ethnic identification by education where the proportion of Canadian identifiers in each educational category is a weighted estimate. These proportions were

TABLE B: ETHNIC IDENTIFICATION BY EDUCATION (SIS) WITH WEIGHTED PROPORTIONS

ETHNIC IDENTITY	EDUCATION			TOTAL
	Incomplete	High School	Degree	
Canadian	29 (39.5%)	51 (53.2%)	5 (25.0%)	85 (44.9%)
Non-Canadian	44 (60.5%)	45 (46.8%)	16 (75.0%)	105 (55.1%)
Total	73	96	21	190

x^2=6.91 p<0.05 C=0.187

calculated separately for each of the educational groups using formula (1). For example, the proportion of respondents who are Canadian is ph in stratum h and the stratum weight is Wh. After pst is evaluated for each educational category, the cell frequencies are easily calculated. When x^2 and Pearson's contingency coefficient are calculated for the data in Table B, a weak relationship exists between ethnic identification and education. This result is in agreement with the test of association between these variables for EAS data (x^2=11.24,C=0.157,p<0.01).

These results indicate that a better approach in the comparison of the two surveys would have been to weight the proportions and means in the SIS survey. Also, the discrepancies between the surveys may be smaller than initially suggested; thus, sequential sample probably compares more favorably with its non-sequential counterpart than stated in Chapter VI.